

**ABSTRACT OF THE DISCLOSURE**

A biventricular cardiac stimulation device has a pulse generator for delivering stimulation pulses at least to the ventricles of a patient's heart. An evoked response detector has independent first and second ventricular sensing channels for ventricular evoked response detection in the ventricles. The pulse generator is controlled to deliver stimulation pulses to the second ventricle with a VV time delay after delivery of a stimulation pulse to the first-stimulated ventricle, the VV time delay being shorter than an evoked response detection time window that follows delivery of the stimulation pulse to the first-stimulated ventricle. An evoked response detector closes the evoked response detection window, or discards detections therein, in response to the emission of a stimulation pulse to the second-stimulated ventricle during the evoked response detection time window of the first-stimulated ventricle.

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